THE INSTITUTE OF PHYSICS

47 BELGRAVE SQUARE, LONDON, S.W.1

BULLETIN

No. 20

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AUGUST 1951

NOTICES TO MEMBERS

Graduateship Examination

A booklet giving the regulations, syllabuses and other relevant information concerning the Institute's Graduateship examination is now available on request. The first examination will be held in 1952.

The Board has decided that holders of the Higher National Certificate in Applied Physics will, in all cases, be entitled to exemption from four papers of the examination (one paper in pure physics, two in mathematics and one in applied physics). They will be required to take two papers in pure physics and these will be chosen by the Institute according to the bias of the course which has been followed for the Higher National Certificate.

Programme of Meetings

For several years prior to 1950, members were issued with a booklet containing a complete list of Institute meetings arranged for each half-session. In response to requests for the recommencement of the issue of such lists, the September Bulletin will contain details of the meetings and conferences so far arranged by all the Branches and Groups for the period up to the end of January, 1952. Reprints of this list, suitable for notice boards, will be available to members on request.

PROCEEDINGS OF THE THIRTY-FIRST ANNUAL GENERAL MEETING

The Thirty-first Annual General Meeting of the Institute was held on 16th May, 1951, at the Institute's House. The President (Prof. W. E. Curtis) was in the Chair. A quorum being present, the Secretary read the notice convening the meeting. The Minutes of the previous Annual General Meeting, held on 20th July, 1950, were read and approved and then signed by the Chairman.

The adoption of the accounts and balance sheet for the year 1950 was moved by the Honorary Secretary (Dr. B. P. Dudding), in the unavoidable absence of the Honorary Treasurer, and seconded by Dr. A. J. Maddock (Fellow). The proposal for adoption was carried unanimously. The President then moved the adoption of the Report of the Board for the year 1950. This was seconded by Dr. N. Thorley (Fellow) and the report was unanimously adopted.

The President having received the report of the scrutineers [Mr. W. J. Meredith (Fellow) and Dr. K. Weissenberg (Fellow)] declared the following elected (or re-elected) to fill the vacancies which will occur on September 30th.

President:	Prof. W. E. Curtis.
Vice-President:	Dr. J. Topping.
Honorary Treasurer:	Mr. E. R. Davies.
Honorary Secretary:	Dr. B. P. Dudding.
Ordinary Membership of the Board:	Mr. O. W. Humphreys, Dr. S. H. Piper.

Messrs. Knox, Cropper & Co. were re-elected auditors for the year 1952.

Mr. A. E. De Barr (Fellow) proposed a vote of thanks to the President, Honorary Officers and members of the Board. This was seconded by Mr. M. R. Hopkins (Fellow) and carried with applause. The President moved votes of thanks, which were carried with applause, to the Honorary Officers of the Branches and Groups, to the several bodies which had allowed the use of their rooms for meetings, and to the permanent staff of the Institute.

This concluded the business of the meeting.

"The man who cannot believe his senses, and the man who cannot believe anything else, are both insane, but their insanity is proved not by any error in their argument, but by the manifest mistake of their whole lives."

G. K. CHESTERTON

NEW BOOKS

Francis Bacon, Philosopher of Industrial Science. By BENJAMIN FARRINGTON. (London: Lawrence and Wishart, Ltd.) Pp. 200. Price 12*s.* 6*d.*

The present book is described as the first English edition. It had been published in America in 1949. Professor Farrington is to be congratulated on the excellence of his writing and the clarity of his exposition. It is a pleasure to read a book on such a worthwhile subject, which does full honour to its inspirer. The author is correctly conscious that Francis Bacon is not generally given his due and renown by scientists, and has set himself out to remedy this. Equally, he has sought to offset the verdict of the nineteenth century on Bacon, which was that he had contributed little to the development of logic. The author agrees that this was so, but rightly emphasizes that in limiting their attention to his contributions to logic, Bacon's main work was completely neglected. It is easy to condemn a man if you draw attention to failure in his minor activities and ignore his major visions. Professor Farrington carries complete conviction when he describes Bacon's philosophy of experimentation with nature, as being a new vision in his time, and yet emerging from the increasing industrial activity of his time. That modern scientific activity derives to a large extent from the Baconian philosophy, particularly in industrial science, is indisputable, and therein it is that an evaluation of Bacon's work such as Professor Farrington has made, is of great contemporary relevance.

Yet the reviewer feels irritated by the book. How irritating it is to read a book which accomplishes consummately well all that its author intended, and yet to feel at the end of it that he should have intended more. Professor Farrington, as no author on Bacon before him has yet done, gives full emphasis to the implications of Bacon's attack on Aristotle and Plato. He does not seek, as others have done, to mitigate or apologise for the severity of this attack. He is quite right in regarding it as fundamental in Bacon's attitude. Now, what irritates the present reviewer is that the author has made no attempt to comment on the actual metamorphosis which the Baconian attitude has undergone in modern science. Indeed, without exactly saying so, he appears to assume that modern science embodies, without methodological modification, the kind of activity envisaged by Bacon.

To the reviewer it is most unsatisfactory that actual discussion of this point is omitted, because it is directly relevant to the attack on Plato. It is quite obvious that methodology in modern science is as much Platonic as it is Baconian. There is a growing school of thought which criticizes modern science precisely on account of its Platonic or Aristotelian elements. Particularly in industrial science, as for example, in rheology, there is restiveness with fixed form concepts of Platonic character, and it is almost certain that this restiveness will spread to other branches of industrial science activity. The reviewer feels certain that Bacon did not foresee that his line of thought would be taken over, and, as he would have called it, "polluted" by Platonists, and it seems most unfortunate that Professor Farrington did not extend his discussion to enlightening us on this point. Had he done so, an excellent and most valuable book would have become a perfectly satisfying study of the relationship, to contemporary activity, of a most important thinker.

R. S. SILVER

Mind, Life and Body. By R. O. KAPP. (London: Constable and Co., Ltd.) 1951. Pp. xviii + 196. Price 12*s.* 6*d.* net.

Professor Kapp is a distinguished engineer; he is also exceedingly forthright. The former accounts perhaps for the basic importance he attaches to the primary relay, the latter for the courage with which disconcerting questions are asked, and, moreover, partly answered.

The theme is the old conflict between monism (all events fully determinate) and dualism (some events not fully determinate). The upshot is in favour of dualism. En route to this decision, the author adopts as a definition of matter the statement that "matter is everything with location." The teleological and causation problems are ably discussed, mostly in terms of diathesis, a word coined for the process by which doubly-determinate structures are produced.

Professor Kapp, as a scientist, claims the right to state problems, even if he does not solve them. Philosophers sometimes think that this is their affair. However, he is a firm believer in the law "A is B or A is not B." There is no place for the mathematical intuitionists. F. I. G. RAWLINS

The Common Sense of Science. By J. BRONOWSKI. (London: W. Heinemann Ltd.) Pp. 154. Price 8*s.* 6*d.* net.

This little volume belongs to the publisher's "Contemporary Science Series." The author traces the main trends of the development of knowledge to illustrate his theme that nations in their great ages have been great in both art *and* science and that science must be regarded as part of the general culture of the world. "We must learn to understand," he writes, "that the content of all knowledge is empirical; that its test is whether it works; and we must learn to act on that understanding in the world as well as in the laboratory."

Although the author is inclined to preach at his readers, which may discourage *some* scientists at least from treating his views with the seriousness they deserve, I recommend the last three chapters ("The Common Sense of Science," "Truth and Value" and "Science, the Destroyer or Creator") to those who interest themselves with the uses to which science is put in this confused world.

For such a small volume, intended to be of wide appeal, the price seems high, even in these expensive times.

H. R. LANG

Trade Barriers to Knowledge. (Paris: UNESCO.) Pp. 168. Price 6s.

"A Liberal's Nightmare" would be an appropriate subtitle for the melancholy tale told by the factual data presented in this volume. Detailed information is given of the tariffs, quotas and other restrictions imposed by some forty-three countries on articles of a broadly educational and cultural nature. It has been compiled by a section of UNESCO designated the Division of Free Flow of Information, Department of Mass Communication (after reading the book one felt that the Division might have been given a less positive title), with the help of the Intelligence Unit of the *Economist*. The articles listed include books, periodicals, manuscripts, paintings, films (exposed and unexposed), sound recordings and scientific instruments.

The picture presented by the data given, of the care which

the "free" nations take to avoid contamination by knowledge or invention originating outside their boundaries, is, indeed, depressing, and it is to be hoped that scientists can be included among those individuals to whom UNESCO appeals to "speed the day when a manual such as this will no longer be necessary."

The book is bound in paper covers and (by the standards set by some of the popular publications of H.M.S.O.) is not very attractively produced. Few individuals would find it worth purchase but it is well worth a place in a library.

N. CLARKE

APPOINTMENTS VACANT

The inclusion of particulars of a vacancy must not be taken to imply that the Institute necessarily approves of the terms offered or that might be offered. Candidates should satisfy themselves that these are satisfactory, and they may always refer to the Institute for advice.

Crompton Parkinson Limited invite applications from graduate **Physicists** with good Honours Degrees to work in their Lamp Development Laboratory on electric discharge lamps and control gear. Applicants with or without experience will be considered. Good prospects for man wishing to make a career in Industry. Send full particulars of training and practical experience, if any, to Ref. GLD, Crompton Parkinson Ltd., Guiseley, Nr. Leeds, Yorkshire.

Young Physicist, with—or likely to obtain—1st or 2nd class Honours Degree, is offered interesting and progressive employment in modern, expanding, rubber research laboratories.

Candidates should be interested in classical physics (in contrast to electronic). A knowledge of rubber technology is not essential, since such will be acquired during training. Some academic or industrial research experience would prove an asset.

Commencing salary not less than £450, and depending upon qualifications and experience.

Superannuation scheme. 5 day week.

Full particulars, age, education, etc., to Group Research Laboratories, **British Tyre and Rubber Co. Ltd.**, Burton-on-Trent.

Telecommunications Engineers and **Physicists** are invited by the **Ministry of Supply** to apply for unestablished appointments in the grade of Principal Scientific Officer or Senior Scientific Officer at the Royal Aircraft Establishment, Farnborough, Hants. Candidates should have a 1st or 2nd class Honours Degree in physics or telecommunications and upwards of 5 years' experience of research and development in one of the following:—R.F. techniques at centimetric wavelengths; centimetric radar, preferably for airborne application; servo systems or telecommunication networks and feedback amplifiers. For the P.S.O. grade candidates must be at least 31 years of age and for the S.S.O. grade at least 26. Salary will be determined on age and on an assessment of the successful candidates' qualifications and experience within the ranges:—Principal Scientific Officer £960–£1,295; Senior Scientific Officer £720–£910. Rates for women somewhat lower. Posts carry benefits of F.S.S.U. Application forms obtainable from Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting D.158/51/A.

Physicist required in Physics Department of **Rothamsted Experimental Station**, Harpenden, Herts, to work primarily on problems in Agricultural Meteorology. Candidates should have a broad interest in all branches of general physics, and some research experience. The appointment will be in the Scientific Officer Grade on the salary scale £380 to £620 (men), £380 to £495 (women), the level of entry depending on age and experience. F.S.S.U. Applications, giving details of age, qualifications and experience, should reach the Secretary, Rothamsted Experimental Station, by August 31, 1951.

Electrical Engineers and **Physicists** are invited by the **Ministry of Supply** to apply for unestablished appointments in the grade of Senior Scientific Officer at the Royal Aircraft Establishment, Farnborough, Hants. Candidates should be at least 26 years of age and have a 1st or 2nd class Honours Degree in the appropriate subject and at least 3 years' post-graduate research experience. They should also have a wide knowledge of communications work and H.F., V.H.F. or display techniques for research work associated with design and development of airborne and ground equipments. Salary will be determined on age and on an assessment of the successful candidate's qualifications and experience within the S.S.O. range £720–£910. Rates for women somewhat lower. Posts carry benefits of F.S.S.U. Application forms obtainable from Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting D.159/51/A.

Physicists are invited by the **Ministry of Supply** to apply for an appointment in the Scientific Officer class at a Design Establishment near London. Candidates should have a 1st or 2nd class Honours Degree in physics and have had experience in optical and photographic work, preferably using high-speed cameras as the work includes photographic methods of observation. For the senior grade candidates should be at least 26 years of age with a minimum of three years' post-graduate research experience. Salary will be determined on age and on an assessment of the successful candidate's qualifications and experience within the ranges:—Senior Scientific Officers £720–£910. Scientific Officer £380–£620. Rates for women somewhat lower. Post carries benefits of F.S.S.U.

Application forms obtainable from Ministry of Labour and National Service, Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting A.188/51/A. Closing date, August 24, 1951.

The Council of **Victoria University College**, Wellington, New Zealand, proposes shortly to appoint a **Senior Lecturer** in the Department of Physics, and invites applications from suitably qualified persons for this post.

Other qualifications being equal, preference will be given to an applicant who has had teaching or research experience in Heat.

The salary will be £1 000 per annum, rising by annual increments of £50 to £1 200 per annum. The initial salary will be determined according to the qualifications and experience of the appointee.

The successful applicant would be expected to take up his duties on February 1, 1952, or as soon thereafter as agreed upon by the Council.

Further particulars and information as to the method of application may be obtained from The Secretary, Association of Universities of the British Commonwealth, 5 Gordon Square, London, W.C.1.

The closing date for the receipt of applications is September 1, 1951.

Physicist or **Electrical Engineer** required for electrical testing of new dielectrics for rubber and plastic cables in the Research Laboratories at Shepherds Bush of **British Insulated Callendar's Cables Limited.** Applications giving details of age, qualifications, experience and salary required should be sent to the Staff Officer, British Insulated Callendar's Cables Limited, 21 Bloomsbury Street, London, W.C.1.

The British Aluminium Company have vacancies for **Junior Technical Staff** of Degree standard on the process side of their Reduction Works at Fort William and Kinlochleven, Scotland. Age up to 30; should have completed National Service or be exempt. Salary in accordance with age and qualifications. Good prospects. Applications should be addressed to The Director in Charge of Establishment, The British Aluminium Company Limited, 46 Berkeley Square, London, W.1.

Electronic Engineers are invited to apply for appointments in the **Ministry of Supply** to work near London or at provincial stations on the development and design of electrically operated systems for a variety of applications including weapons, tele-

communications and radar equipment. The responsibilities of the posts will vary according to the age, qualifications and experience of the selected candidates, and acceptable qualifications range from 1st or 2nd class Honours Degree in physics or light electrical engineering or equivalent qualifications, Corporate Membership of The Institution of Electrical Engineers to Higher School Certificate, Higher National Certificate, etc. Grade and entering salary will be determined after interview on ranges up to approximately £1 000 a year. Some posts carry F.S.S.U. benefits, but all are unestablished. Application forms obtainable from M.L.N.S. Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting D.134/51/A. Closing date August 24, 1951.

Vacuum Physics Laboratory requires **engineers** or **physicists** experienced in development of special valves for radar applications at microwave frequencies, particularly magnetrons, TR cells or Klystrons. Openings include senior positions for suitable applicants offering good opportunities for advancement. Apply, quoting "VPL," and give full details of training, qualifications and experience and salary expected, to the Personnel Office, **Ferranti Limited,** Ferry Road, Edinburgh.

Physicists and **Engineers** for instrument work. **Imperial Chemical Industries** have vacancies in their Billingham Division for physicists and engineers, to carry out research and development on measuring, recording and automatic control instruments and to supervise Works use of them; also for experimental stress analysis. Candidates should be between 22 and 45 years of age. They must have an honours degree and preferably some practical or research experience. Please write, giving full details of qualifications and experience, etc., quoting ref. A.8, to the Staff Manager, Imperial Chemical Industries Limited, Billingham Division, Billingham, Co. Durham.

Large **American chemical manufacturing firm** requires all types **non-nuclear physicists** for permanent research development positions in U.S.A. Applicants should have a Ph.D. degree or equivalent research experience, and should be under 35 years of age and eligible to emigrate to the United States. Salaries will be about U.S. $470 per month and upwards, commensurate with age and experience. Write giving full particulars to Box No. A.V.15, The Institute of Physics, 47 Belgrave Square, London, S.W.1.

A number of interesting openings are available for **physicists** at the Research Laboratories of **The General Electric Co. Ltd.,** East Lane, North Wembley, Middlesex. Vacancies include those for work on discharge lamps, radio-communications, high frequency heating, magnetrons, magnetic materials and radio valves. Applications are invited from graduates in the age group 20–30. Some research experience is desirable but not essential. Candidates should write to the Staff Manager (Ref. GBLC/433) stating age, academic qualifications and experience.

Research Physicist required by **Crompton Parkinson Limited** for work in their Guiseley Lamp Laboratories. Good honours degree with post-graduate research degree or equivalent research experience. Applicants preferably should have an interest in gas discharge phenomena with knowledge of vacuum technique. The appointment will carry a good salary, commensurate with qualifications and experience of person appointed, and offers attractive prospects for a progressive career. Superannuation scheme. Send full particulars of training and experience to Ref. GLD, Crompton Parkinson Limited, Guiseley, Yorkshire.

There are two vacancies for **laboratory technicians** in the Department of Physics, **The University of Manchester.** Salary in accordance with the University's Scales for Technicians, with membership of a superannuation scheme.

Each of the selected candidates will be required to undertake the maintenance of one of the teaching laboratories under the supervision of the laboratory director.

Apply in the first instance, in writing, giving age and qualifications to The Chief Technician, The Department of Physics, The University, Manchester 13.

Applications are invited by the Ministry of Supply for the following unestablished appointments at the **Royal Aircraft Establishment, Farnborough, Hants**:—

Physicists or Mathematical Physicists.

(1) **Principal Scientific Officer.** Candidates should have experience of Radar systems analysis and war-time operational research. A strong mathematical bias is desirable. Ref. A.133/51A/BF.

(2) **Senior Scientific Officer,** for theoretical investigations. A knowledge of statistical methods is desirable. Ref. A.134/51A/BF.

Aeronautical Engineer.

(3) **Senior Scientific Officer,** with experience in planning and analysis of Flight trials and application of results to project design. A knowledge of servo mechanism theory and practice is required, experience of liaison with industrial firms an advantage. Ref. C.217/51A/BF.

Physicists, Mathematicians or Engineers.

(4) **Senior Scientific Officer,** with research experience involving arithmetical applications of mathematics in the analysis of physical data, and the formulation of problems for solution by automatic computing machinery. A knowledge of aerodynamics an advantage. Ref. A.135/51A/BF.

(5) **Senior Scientific Officer,** with wide experience of methods of measurement in physics or engineering research, experience and up-to-date knowledge of electronics. Ref. A.136/51A/BF.

Candidates should have a 1st or 2nd class Honours degree in the appropriate subject and at least 3 years' post-graduate research experience is necessary. For the P.S.O. post candidates must be at least 31 years of age, for the S.S.O. post at least 26 years. Salary will be determined on age and on an assessment of the successful candidates' qualifications and experience within the ranges:—Principal Scientific Officer—£960–£1,295. Senior Scientific Officer—£720–£910. Rates for women somewhat lower. Posts carry benefits of F.S.S.U. Application forms obtained from Technical and Scientific Register (K), York House, Kingsway, W.C.2, quoting appropriate reference number.

Applications are invited for the post of **Lecturer in Physics,** Department of Physics and Mathematics, **College of Technology, Birmingham.** The department is concerned mainly with post-graduate courses, external degrees in pure science and special physics, and National Certificates in Applied Physics. Research or industrial experience, preferably in electronics, is desirable.

Salary will be in accordance with the Burnham (Further Education) Scale for Lecturers (£900 × £25 − £1,000 for men, £720 × £20 − £800 for women).

Further particulars and form of application may be obtained by sending a stamped addressed foolscap envelope to the Registrar, College of Technology, Suffolk Street, Birmingham, 1. Completed forms should be returned to him not later than two weeks after the appearance of this notice.

Physicists are invited by the **Ministry of Supply** to apply for unestablished appointments at a Research Establishment near London for work connected with the handling and measurement of radioactive materials and associated health physics problems. Certain posts call for a 1st or 2nd class Honours Degree preferably followed by some research experience, other posts are open to candidates with Inter. B.Sc. qualifications although higher qualifications would be an advantage. A knowledge of electronics, including the ability to design and construct counters and other electronic equipment, would be of advantage for some posts. The range of salaries covered by these posts is approximately £250–£1 000 and grade and starting salaries will depend upon the age, qualifications and experience of the successful candidates. Some posts carry benefits of F.S.S.U. Application forms obtainable from Ministry of Labour and National Service, Technical and Scientific Register (K), York House, Kingsway, London, W.C.2, quoting A.200/51A. Closing date, August 24, 1951.

Graduates with high honours or research degrees required for fundamental research in the fields of electron optics, electron microscopy and vacuum physics.

Further details available on request, The Manager, Research Laboratory, **Associated Electrical Industries Limited,** Aldermaston Court, Aldermaston, Nr. Reading, Berks.

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